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# Industrial Mobilization in World War I: Implications for Future Great Power Conflict

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Monterey, California. Naval Postgraduate School

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# **Industrial Mobilization in World War I: Implications for Future Great Power Conflict**

Philip Koenig and Norbert Doerry

Naval Sea Systems Command  
Washington, D.C.

May 8-9, 2019

# Introduction

- The post-Cold War “Peace Dividend” era is over
- “Overt challenges to the free and open international order and the re-emergence of long-term, strategic competition between nations.” (DoD 2018)
- Possibility of non-nuclear, industrial-scale war has re-emerged.

What can we learn from our experience in World War I



[http://americanhistory.si.edu/onthewater/exhibition/6\\_2.html](http://americanhistory.si.edu/onthewater/exhibition/6_2.html)  
Accessed March 3, 2019

# WWI Naval Timeline

- 28 July 1914: Austria declared war on Serbia
- 1914: First convoys for troopships
- 1915: Naval Blockade of Britain
- 7 May 1915: Lusitania sunk
- Spring 1916: Ship tonnage sunk exceeded new ship tonnage delivered
- 31 May 1916: Battle of Jutland
- Early 1917: German U-boat campaign
- 6 April 1917: U.S.A. declares war on Germany
- June 1917: Regular transoceanic convoys begin
- 1918: North Sea Mine Barrage
- 11 Nov 1918: Armistice signed



Sinking of the Linda Blanche out of Liverpool by SM U-21  
(Willy Stöwer)

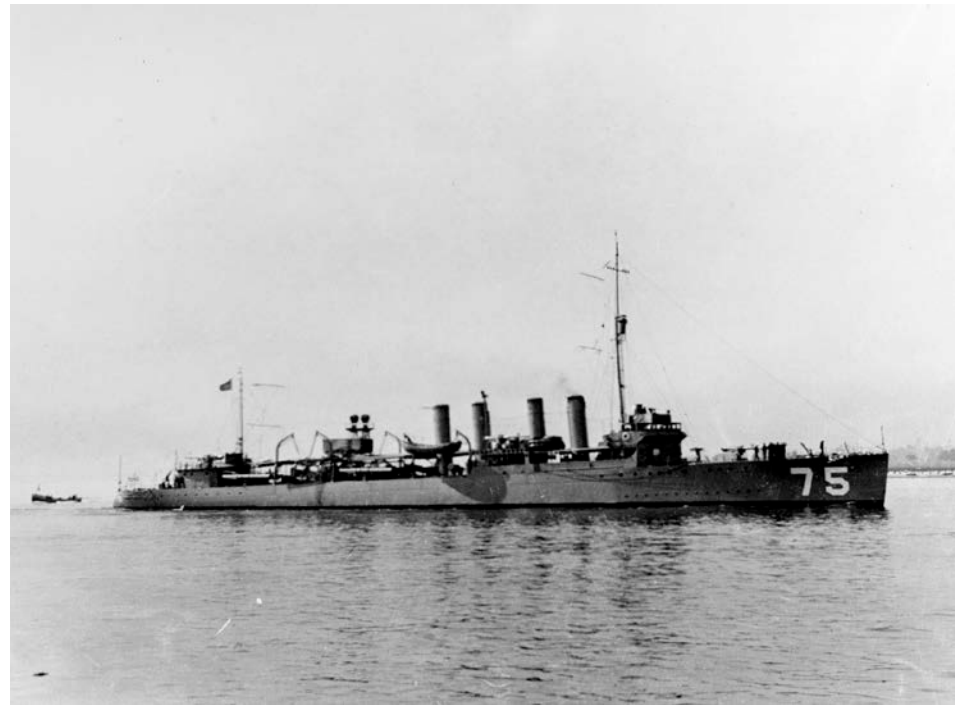
Sink submarines  
Build cargo ships faster than they can be sunk

# Naval Vessels Delivered by Year

Year	No.	Displacement tonnage	Average displacement	No. of battleships	No. of cruisers	No. of torpedo boats	No. of destroyers	No. of submarines	No. of other types
1898	12	28,111	2,343		1	3			8
1899	8	24,259	3,032	2					6
1900	6	13,349	2,225	1		3		1	1
1901	8	24,550	3,069	2		1			5
1902	17	24,560	1,445	1					16
1903	15	24,573	1,638	1	1			6	7
1904	5	22,362	4,472	1	3				1
1905	9	72,505	8,056		7				2
1906	10	140,192	14,019	6	4				
1907	9	90,743	10,083	4	2			3	
1908	9	85,435	9,493	3	5			1	
1909	16	81,135	5,071	2			4	6	4
1910	12	77,385	6,449	2			7	1	2
1911	12	61,872	5,156	2			9		1
1912	17	77,598	4,565	2			6	7	2
1913	11	81,849	7,441				4	3	4
1914	20	66,080	3,304	2			4	10	4
1915	11	33,765	3,070				7	1	3
1916	22	160,805	7,309	4			9	7	2
1917	16	77,289	4,831	1			5	5	5
1918	89	155,642	1,749	1			44	36	8
1919	157	221,255	1,409	1			104	22	30
1920	94	171,141	1,821	1			79	10	4
1921	40	172,974	4,324	2			28	5	5
1922	12	24,286	2,024	one aircraft carrier			3	8	1

# U.S.S. Wickes (DD 75)

- Laid down: 26 June 1917
- Launched: 25 June 1918
- Commissioned 31 July 1918
- Convoy escort in WWI
- 1247 tons full load
- Length: 314 ft 4.5 in
- Armament
  - 4 x 4"/50 guns
  - 2 x 1 pounder guns
  - 12 x 21 inch torpedo tubes
- Crew: 100 officers and enlisted

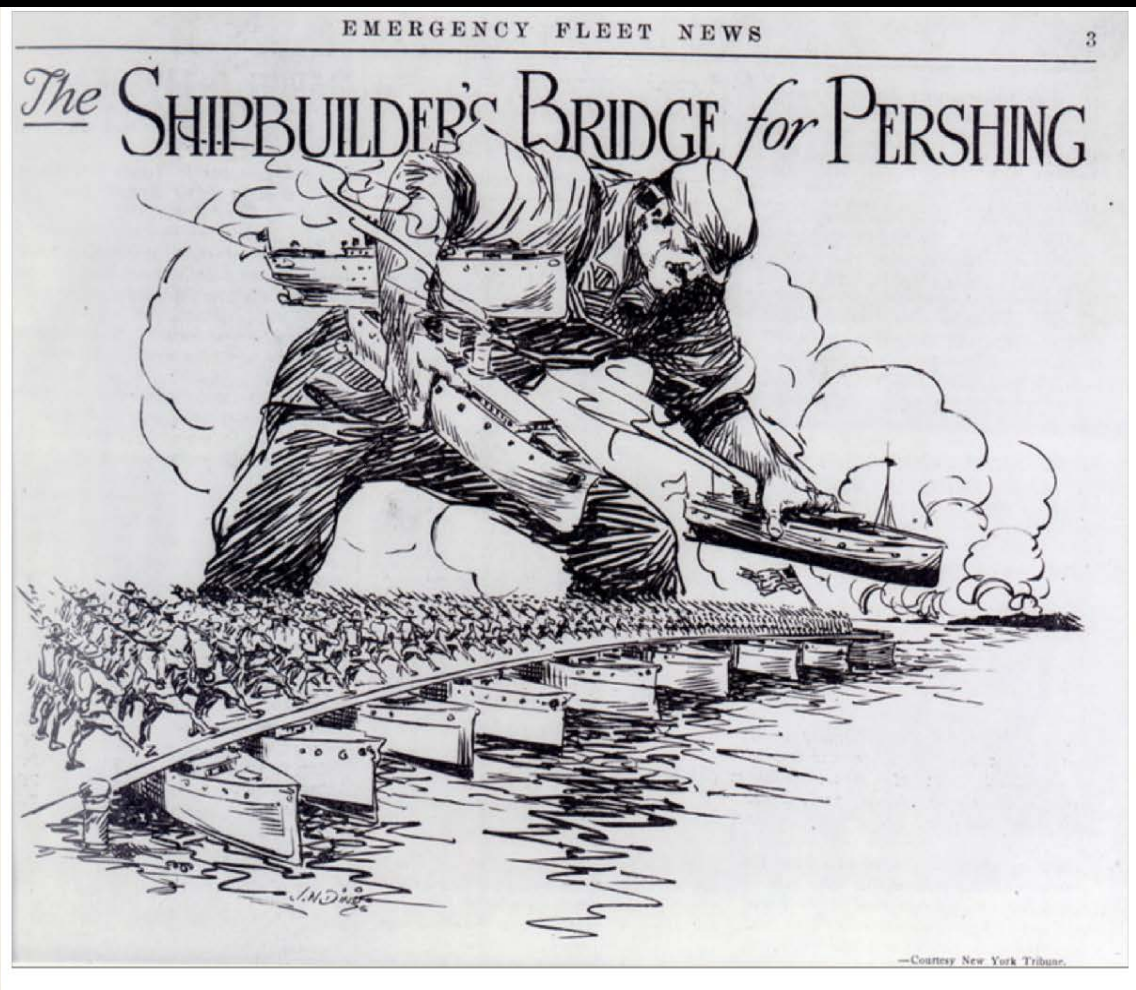


# Shipyards that build major warships from 1913-1922

Shipyard	Location	Major warship types built		
Bath Iron Works	Bath, Me.	Destroyers		
Bethlehem Shipbuilding Corp. (Fore River)	Quincy, Mass.	Battleships, destroyers, submarines		
Bethlehem Shipbuilding Corp.	Squantum, Mass.	Destroyers		
Bethlehem Shipbuilding Corp. (Union Iron Works)	San Francisco	Destroyers, submarines		
California Shipbuilding Co.	Long Beach, Calif.	Submarines		
Craig Shipbuilding Corp.	Long Beach, Calif.	Submarines		
Cramp, William and Sons	Philadelphia, Pa.	Destroyers, submarines		
Electric Boat Co.	Groton, Conn.	Submarines		
Lake Torpedo Boat Co.	Bridgeport, Conn.	Submarines		
The Moran Co.	Seattle, Wash.	Submarines		
Newport News Shipbuilding and Dry Dock Co.	Newport News, Va	Battleships, destroyers		
New York Shipbuilding Corp.	Camden, N.J.	Battleships, destroyers		
Seattle Construction and Dry Dock Co.	Seattle, Wash.	Destroyers, submarines		
Charleston Navy Yard	Charleston, S.C.	Destroyers		
Mare Island Navy Yard	Vallejo, Calif.	Battleships, destroyers		
New York Navy Yard	Brooklyn, N.Y.	Battleships		
Norfolk Navy Yard	Portsmouth, Va.	Aircraft carriers, destroyers		
Portsmouth Navy Yard	Portsmouth, N.H.	Submarines		
Puget Sound Navy Yard	Bremerton, Wash.	Submarines		



# World War I propaganda featuring the United States Shipping Board (USSB) and the Emergency Fleet Corporation



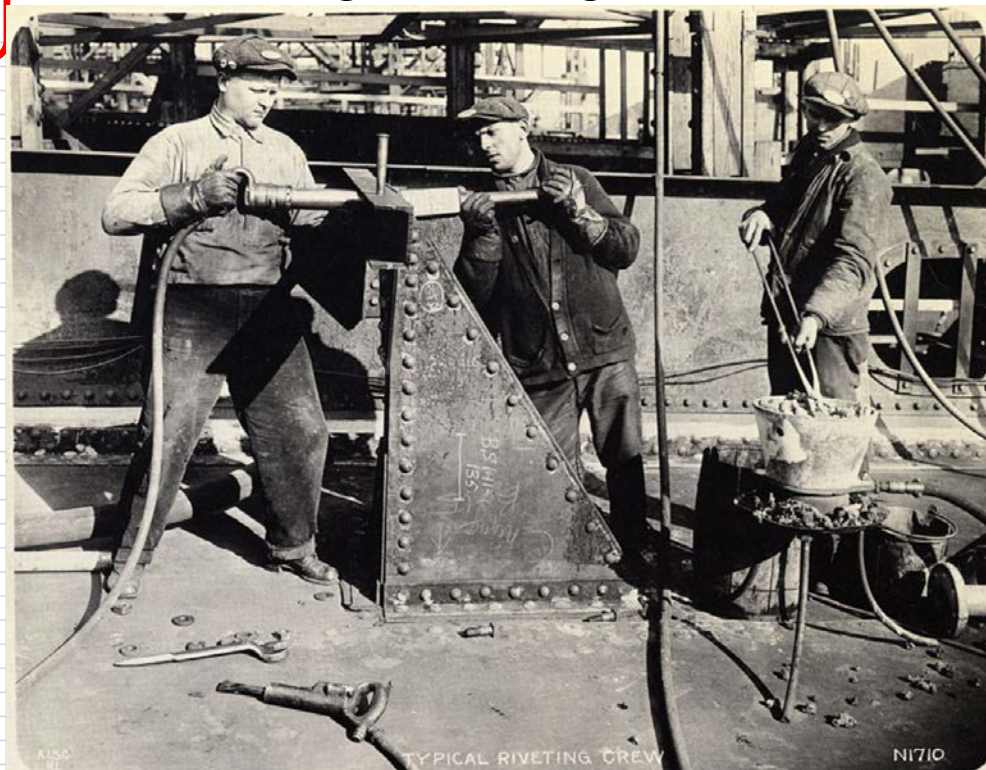
Sources: <https://docsouth.unc.edu/wwi/41892/50.html> accessed Feb. 10, 2019,  
[http://americanhistory.si.edu/onthewater/exhibition/6\\_2.html](http://americanhistory.si.edu/onthewater/exhibition/6_2.html) accessed Feb. 11, 2019



# Merchant Shipbuilding in WWI: Emergency Fleet Corporation Yards

Riveting crew at Hog Island, 1919

Firm	Shipyard location	No. of ships delivered to USSB	No. delivered to USSB before Nov. 1918
<b>East Coast (13 yards)</b>			
American International Shipbuilding	Hog Island, Pa.	122	0
Atlantic Corporation	Portsmouth, N.H.	10	0
Carolina Shipbuilding	Wilmington, N.C.	8	0
Downey Shipbuilding	Arlington, N.Y.	10	0
Foundation Company	Kearny/Newark, N.J.	10	5
Merchant Shipbuilding	Bristol, Pa.	40	0
Newburgh Shipyards	Newburgh, N.Y.	12	0
Pusey and Jones	Gloucester City, N.J.	20	3
Standard Shipbuilding	Shooters Island, N.Y.	23	7
Submarine Boat Company	Newark, N.J.	118	0
Terry Shipbuilding	Savannah, Ga.	11	0
Texas Steamship Company	Bath, Me.	4	4
Virginia Shipbuilding	Alexandria, Va.	12	0
<b>Gulf Coast (7 yards)</b>			
Oscar Daniels Shipbuilding Company	Tampa, Fla.	10	0
Doullut and Williams	New Orleans, La.	8	0
Foundation Company	New Orleans, La.	5	0
Mobile Shipbuilding	Mobile, Ala.	14	1
National Shipbuilding	Orange, Tex.	12	1
National Shipbuilding Corporation	Violit, La.		
Pensacola Shipbuilding	Pensacola, Fla.	10	0
<b>Midwest (2 yards)</b>			
Globe Shipbuilding	Superior, Wis.	19	4
Saginaw Shipbuilding	Saginaw, Mich.	18	2
<b>West Coast (10 yards)</b>			
Ames Shipbuilding and Dry Dock Company	Seattle, Wash.	25	7
Columbia River Shipbuilding	Portland, Ore.	32	8
J.F. Duthie and Company	Seattle, Wash.	27	12
Hanlon Dry Dock and Shipbuilding Company	Oakland, Calif.	11	4
Northwest Steel	Portland, Ore.	34	13
Pacific Coast Shipbuilding	Bay Point, Calif.	10	0
Seattle North Pacific Shipbuilding	Seattle, Wash.	10	0
Skinner and Eddy	Seattle, Wash.	40	25
Supple-Bollin Shipbuilding	Portland, Ore.	12	8
Union Construction Company	Oakland, Calif.	10	0
Sum:		707	104

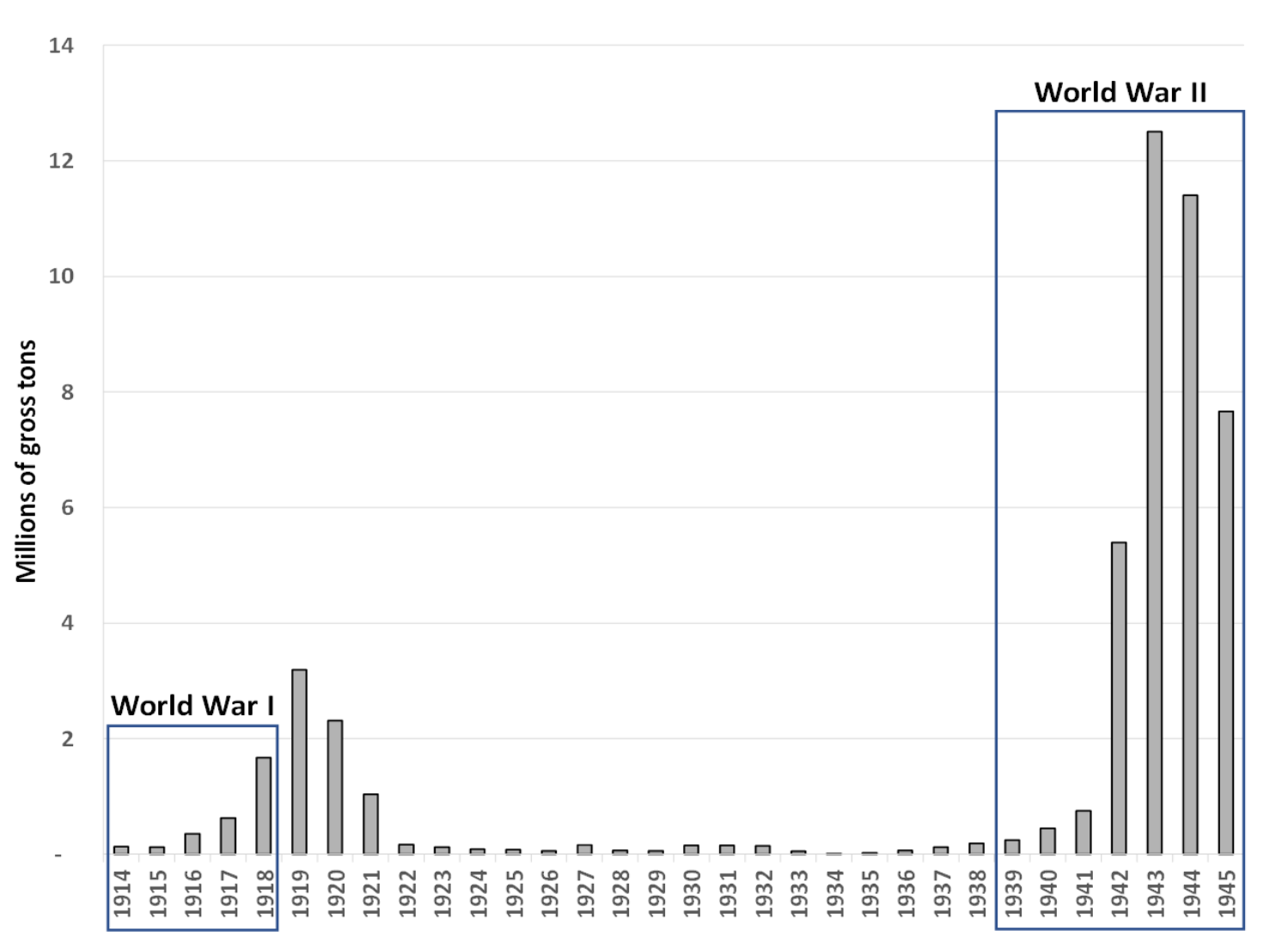


[http://americanhistory.si.edu/onthewater/exhibition/6\\_2.html](http://americanhistory.si.edu/onthewater/exhibition/6_2.html)

Most ships delivered after the Armistice

# Gross tons of steel merchant ships (over 2,000 gt) delivered, 1914-1945; time-slots of World War I and World War II involvement are indicated.

(Data: Smith and Brown, 1948, Table 9)

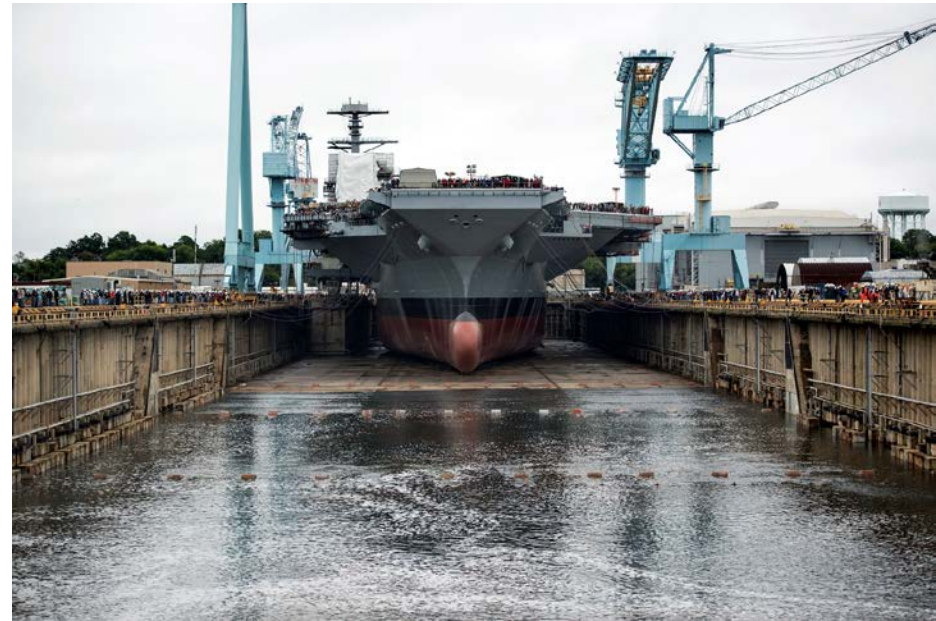


# Observations

- Shipbuilding program was not effective because it started too late.
  - Started with Shipping Act of 1916 and Naval Act of 1916
  - Peak production was in 1919
  - Lasted through 1922
- The industrial expansion effort was impressive and served as a “trial run” for World War II.
- The types of ships needed in quantity during the war differed from the types built prior to the war.
  - Pre-war: Battleships and cruisers
  - During the war: Destroyers and submarines

# Recommendations

- Invest in options to increase industrial capacity rapidly.
- Reexamine merchant marine and merchant shipbuilding policies.
- Create (and prototype) high-volume producible detail designs of merchant ships and naval ships.
- Invest in ship design flexibility.



U.S. Navy Photo 131011-N-KK576-015:  
Mass Communication Specialist 1st Class Joshua J. Wahl